

Application No. 10/789,498  
Amendment filed concurrently with RCE

Customer No. 01933

**Listing of Claims:**

1. (Currently Amended) An AC adapter for use in charging a secondary battery which is contained in or mounted on a main body, said AC adapter comprising:

a primary side circuit for turning, by using a switching  
5 element, an input DC voltage applied to a primary winding of a transformer on and off;

a secondary side circuit for rectifying and smoothing an AC voltage induced in a secondary winding of said transformer to produce an adapter voltage;

10 a voltage control circuit for detecting a variation of said adapter voltage to produce a voltage control signal;

a constant current control circuit for detecting a charging current flowing in said secondary side circuit to produce a constant current control signal;

15 a photocoupler for feeding said voltage control signal and said constant current control signal as a feedback signal back to said primary side circuit;

a switching control circuit for controlling, in response to said feedback signal, on and off of said switching element; and

20 detection means, disposed in said secondary side circuit, for detecting that when said charging current decreases to less

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than a set current value due to a drastic decrease of said  
charging current to produce a detected signal; ~~whereby~~

~~wherein said voltage control circuit operates so as to have~~  
25 ~~repeated repeats~~ operations comprising ~~the steps of~~ gradually  
lowering said adapter voltage and increasing, in response to said  
detected signal, said adapter voltage by a predetermined voltage,  
so that said AC adapter carries out a constant voltage charging  
with a necessary minimum voltage difference which is a potential  
30 difference between said adapter voltage and a battery voltage of  
said secondary battery on a constant current charging.

2. (Original) An AC adapter as claimed in claim 1, wherein  
said main body comprises a portable telephone set.

3. (Original) An AC adapter as claimed in claim 1, wherein  
said predetermined voltage is equal to 100 millivolts.

4. (Previously Presented) An AC adapter as claimed in  
claim 1, further comprising a reference voltage generating  
circuit for supplying a reference voltage to said voltage control  
circuit, said voltage control circuit controlling said adapter  
5 voltage so as to change said adapter voltage by changing said  
reference voltage by said reference voltage generating circuit.

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5. (Original) An AC adapter as claimed in claim 4, wherein said main body comprises a portable telephone set.

6. (Currently Amended) A method of charging, by using an adapter voltage, a secondary battery which is contained in or mounted on a main body, said method comprising the steps of:

- a) gradually lowering said adapter voltage;
- 5 b) increasing said adapter voltage by a predetermined voltage when a charging current flowing through said secondary battery is less than a set current value due to a drastic decrease of the charging current; and
- c) repeating said steps a) and b), whereby constant voltage  
10 charging is carried out with a necessary minimum voltage difference which is a potential difference between the adapter voltage and a battery voltage of the secondary battery on a constant current charging.

7. (Original) A method as claimed in claim 6, wherein said predetermined voltage is equal to 100 millivolts.